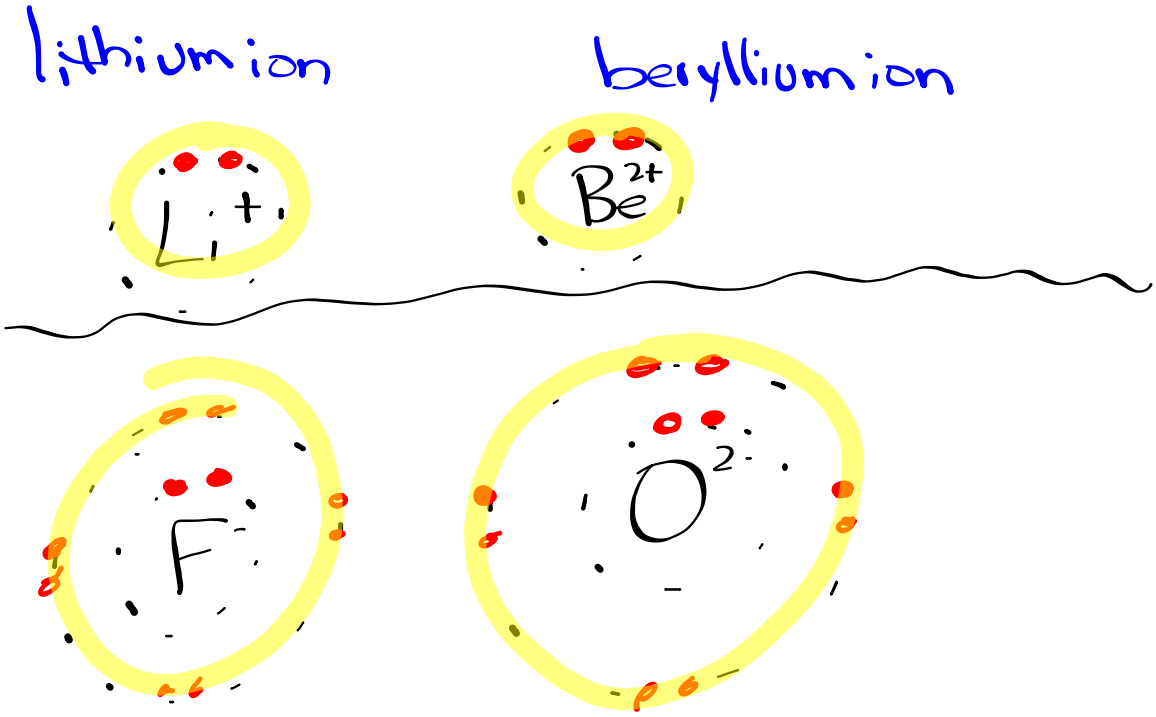
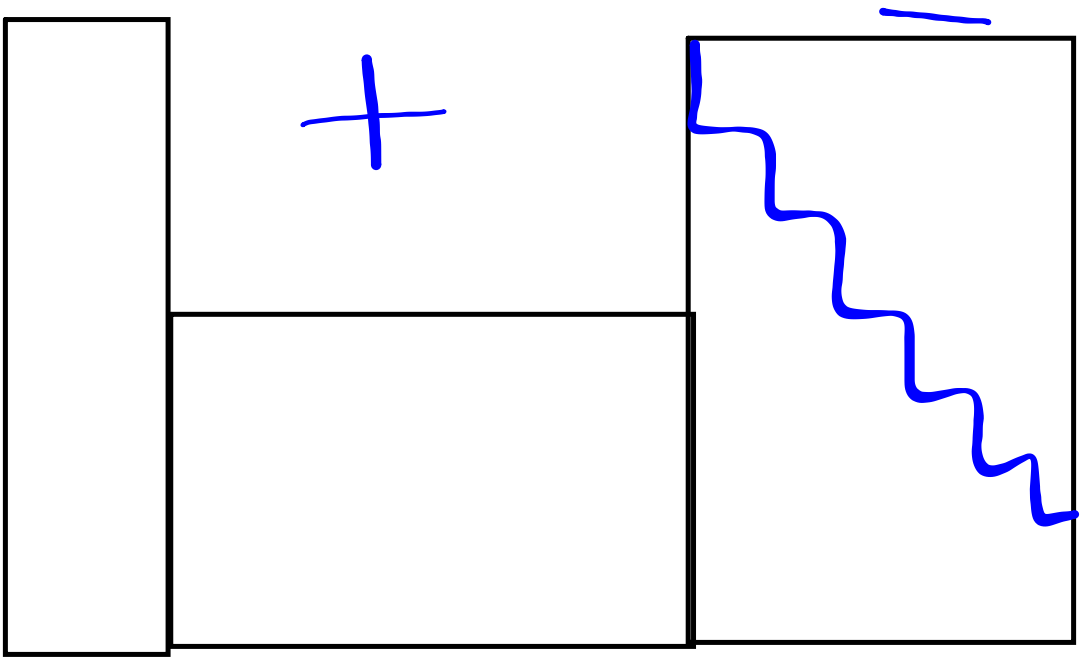
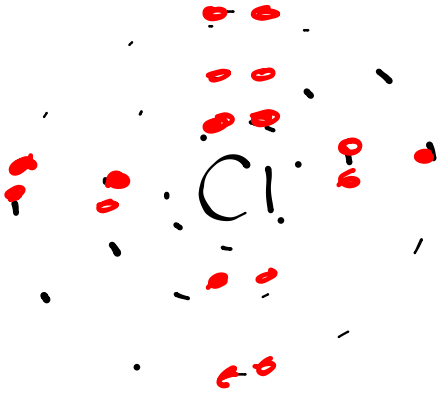
Check Homework



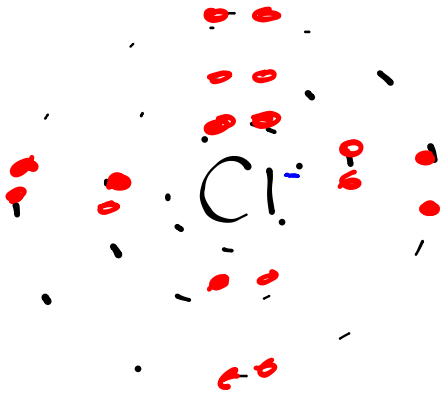
positive ions → cations

negative ions → anions





$17p^+$
$17e^-$



$17p^+$
$18e^-$
$1-$ gain 1

Review of Terms...

ion - charged atom in which the number of electrons is different from the number of protons.

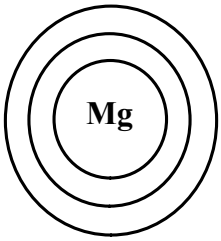
An atom that gains or loses one or more electrons becomes an ion.

Ex. F^- (9 proton, 10 electrons)

ionic charge - numerical value of the electric charge with a plus or minus sign

Ex. F^- ⇒ ionic charge of 1-

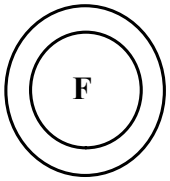
Mg^{2+} ⇒ ionic charge of 2+



e^-

When magnesium loses two electrons, it become Mg^{2+} (12 protons, 10 electrons). It is now has a stable arrangement of electrons. This is called a magnesium ion.

e^-



When fluorine gains an electron, it has a stable electron arrangement, the same as neon (Ne). We call the Fion a fluor**ide** ion.

When nonmetals gain electrons to form ions, the name of the ion changes its ending to "ide".

⇒ fluorine atom becomes a fluoride ion

Valence Electrons

valence electrons the electrons in the last shell or energy level of an atom.

- show a repeating or periodic pattern
- increase in number as you go across a period
- when you start the new period, the number drops back down to one and starts increasing again

			C 4	N 5	O 6	F 7	Ne 8
Na 1			Si 4				
			Ge 4				

****Look at the group number!****

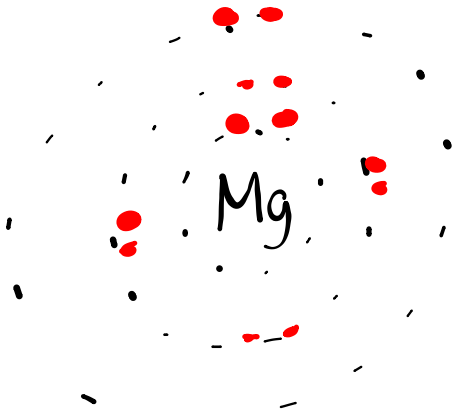
Exercise

p. 187 #7,8
Ions worksheets

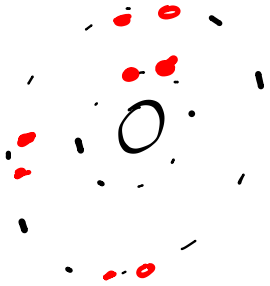
12 2+

			C 4	N 5	O 6	F 7	Ne 8
Na 1			Si 4				
			Ge 4				

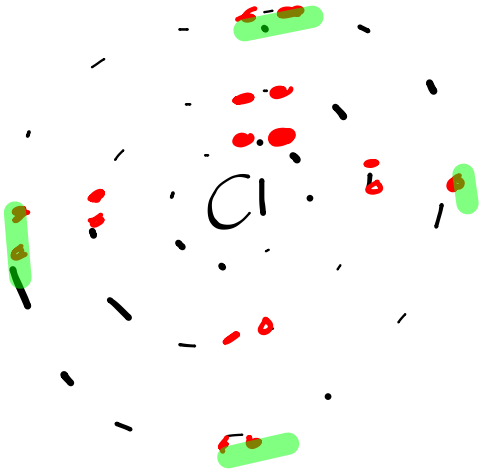
1 lose Li^+



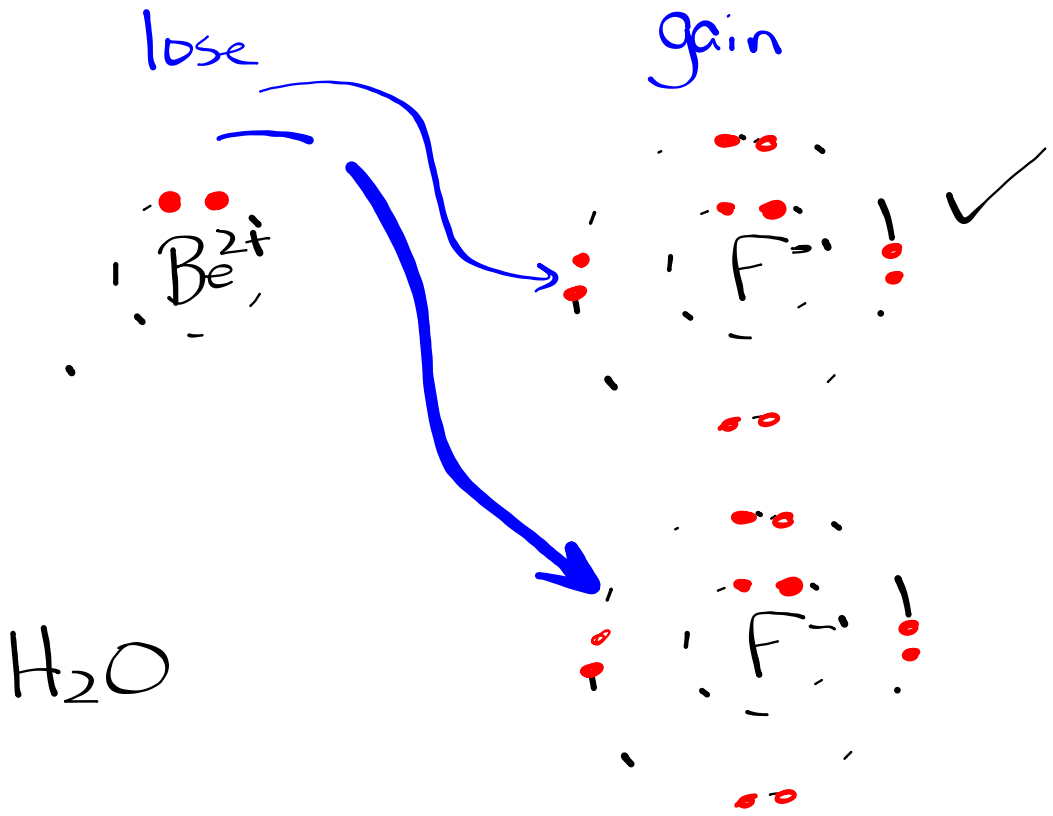
2 lose Mg^{2+}



6 gain O^{2-}



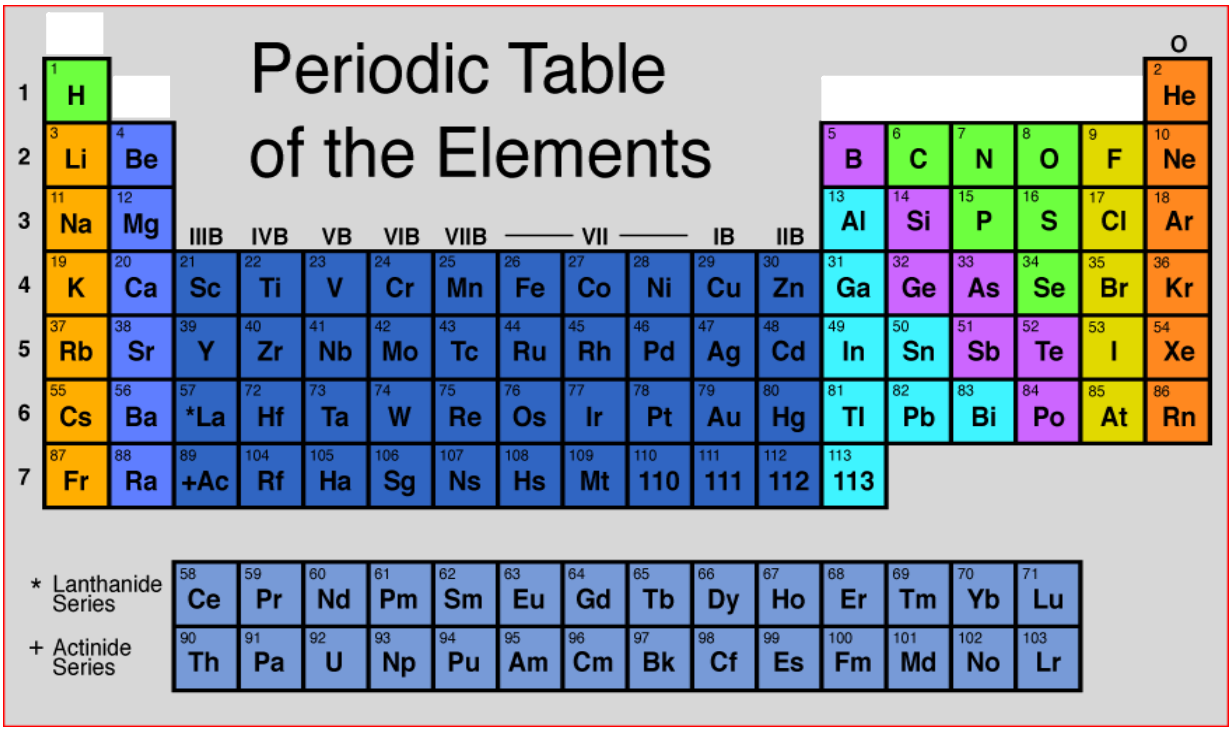
7 gain Cl^-



H_2O

Be^{2+} F^- F^-

BeF_2 beryllium fluoride


Periodic Table of the Elements
IIIB IVB VB VIB VIIB VII IB IIB
1 H
2 He
3 Li 4 Be 5 B 6 C 7 N 8 O 9 F 10 Ne
11 Na 12 Mg 13 Al 14 Si 15 P 16 S 17 Cl 18 Ar
19 K 20 Ca 21 Sc 22 Ti 23 V 24 Cr 25 Mn 26 Fe 27 Co 28 Ni 29 Cu 30 Zn 31 Ga 32 Ge 33 As 34 Se 35 Br 36 Kr
37 Rb 38 Sr 39 Y 40 Zr 41 Nb 42 Mo 43 Tc 44 Ru 45 Rh 46 Pd 47 Ag 48 Cd 49 In 50 Sn 51 Sb 52 Te 53 I 54 Xe
55 Cs 56 Ba 57 *La 72 Hf 73 Ta 74 W 75 Re 76 Os 77 Ir 78 Pt 79 Au 80 Hg 81 Tl 82 Pb 83 Bi 84 Po 85 At 86 Rn
87 Fr 88 Ra 89 +Ac 104 Rf 105 Ha 106 Sg 107 Ns 108 Hs 109 Mt 110 110 111 111 112 112 113 113
* Lanthanide Series
58 Ce 59 Pr 60 Nd 61 Pm 62 Sm 63 Eu 64 Gd 65 Tb 66 Dy 67 Ho 68 Er 69 Tm 70 Yb 71 Lu
+ Actinide Series
90 Th 91 Pa 92 U 93 Np 94 Pu 95 Am 96 Cm 97 Bk 98 Cf 99 Es 100 Fm 101 Md 102 No 103 Lr

Ionic Compounds

Ionic compounds are made by elements transferring electrons.

- the **outermost electrons** are involved in making compounds

Ex.

Exercise

p. 191 #1-4

Forming Ionic Compounds Sheet

Read p.188-189

#1-4

Ionic Compounds

How to Write an Ionic Compound

1. Write the symbols, with the metal always being written first.
   Ca I

2. Write the ionic charge above the symbol to indicate the stable ion that each element forms
   Ca^{2+} I^{1-}

3. Determine how many ions of each type you need so that the total ionic charge is zero.
   One Ca^{2+} will balance two I^{-}

4. Write the formula using subscripts to indicate the number of ions of each type.
   CaI_2

- when naming ionic compounds, the name of the metal remains the same but the name of the nonmetal changes to an -ide ending

- some metals have more than one charge
  they are called multi-valent ions
- these elements are found in the middle block of the periodic table
  the charge that is to be used is indicated in brackets with a Roman numeral
  Ex. iron(III) oxide
  Fe^{3+} O^{2-}
  Fe_2O_3

NOTE: If there is a common factor between the two charges, reduce!

Ex. Al^{3+} N^{3-}

Write the formulas and the names of the compounds formed by the combination of the elements:

a) sodium and fluorine
b) calcium and chlorine
c) magnesium and oxygen

Homework

p.195 #1-10